

Risolvere i seguenti problemi

$$\begin{cases} u_{tt} = 3u_{xx} & x > 0, t > 0 \\ u(x, 0) = 0, u_t(x, 0) = 0 \\ u(0, t) = f(t), \lim_{x \rightarrow +\infty} u(x, t) = 0 \end{cases}$$

$$\begin{cases} u_{tt} + 2u_t + u = u_{xx} & x > 0, t > 0 \\ u(x, 0) = 0, u_t(x, 0) = 0 \\ u(0, t) = f(t), \lim_{x \rightarrow +\infty} u(x, t) = 0 \end{cases}$$

$$\begin{cases} u_{tt} + 6u_t + 9u = 5u_{xx} & x > 0, t > 0 \\ u(x, 0) = 0, u_t(x, 0) = 0 \\ u(0, t) = f(t), \lim_{x \rightarrow +\infty} u(x, t) = 0 \end{cases}$$

$$\begin{cases} u_t = 5u_{xx} + t^2 & x > 0, t > 0 \\ u(x, 0) = 6 \\ u(0, t) = e^{-t}, \quad u \text{ limitata per } x \rightarrow +\infty \end{cases}$$

$$\begin{cases} u_t = u_{xx} + (t + 6) & x > 0, t > 0 \\ u(x, 0) = 4 \\ u(0, t) = \cos(t), \quad u \text{ limitata per } x \rightarrow +\infty \end{cases}$$

$$\begin{cases} u_t = 2u_{xx} - 3t & x > 0, t > 0 \\ u(x, 0) = 3 \\ u(0, t) = t^2 + 4, \quad u \text{ limitata per } x \rightarrow +\infty \end{cases}$$